



The background features a collage of industrial images. At the top right, two workers in high-visibility jackets and hard hats are looking at a tablet. In the center, a large yellow dump truck is shown from a low angle, focusing on its front wheel and cab. To the right, there's a view of industrial structures with ladders and walkways, illuminated by artificial lights at night.

Electrical System Packaging

Introduction:

Mining companies which are seeing the sign of revival are looking for ways to make mining process cost-effective by optimizing their energy consumption. Off-highway mining vehicles manufacturers are moving to clean energy – like battery-powered vehicles to optimize operational costs.

A global heavy engineering equipment manufacturer wanted to move to cleaner energy to gain a competitive edge in terms of their innovations hitting the market. They wanted to move away from diesel-powered vehicles – as they caused delays during re-fueling besides being a health hazard.

Re-engineering existing diesel-powered engines to battery-powered vehicles – have one major task. The electrical wiring systems need to support the existing energy distribution system – which would also migrate the existing tool harness.

Looks complex? Here is a quick read on how it is made simple.

The Customer:

A global leader in heavy engineering.

Business Scenario:

The customer wanted to develop and optimize the entire electrical wiring system for their 240 Ton mining truck which must be energy efficient, safe and fault-resistant. From designing to integrating the schematics for entire mining truck, including various systems and sub-systems.

Solution:

Our engineers analyzed the project and proposed a top-down approach for arriving at the desired solution as it helps for a better system integration. Using the Ladder diagram, the schematic diagrams of the truck were drawn based on the given customer standards and guidelines. The truck background model was developed in 3D for the harness routing, providing a virtual prototype of the truck. This helped the engineers to reduce errors from mismatching wire properties, such as bend radius, temperature rating etc. Parts equivalent to the existing off the shelf parts like connectors, terminals etc. were identified.

Key Highlights:

- Cost savings by replacing around 200 old parts with equivalent existing off the shelf parts.
- Digital diagram with data from more than 200 pages wiring harness prints.
- Routed around 50 harness assemblies including most complex cab wiring harness.
- Created around 500 new models & drawings for the entire wiring system.
- Constant handholding of customer until the prints were released into their database.

Why AXISCADES

Product innovation and performance enhancement.

Product localization expertise.

Expertise to meet, reduced emission to meet stringent laws to shortening lead time and design cycle.

Aggressive cost reduction through VAVE ownership model.